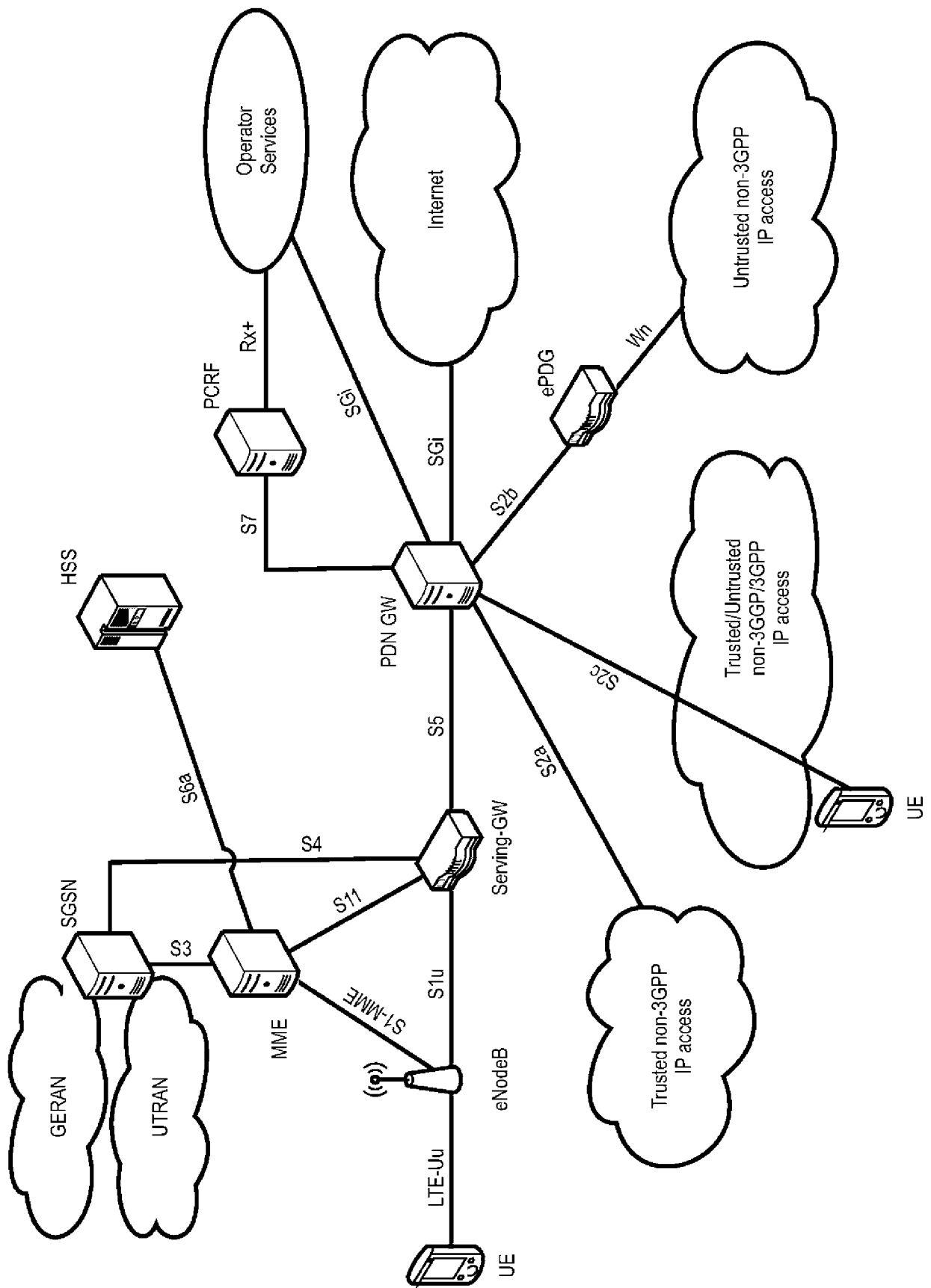
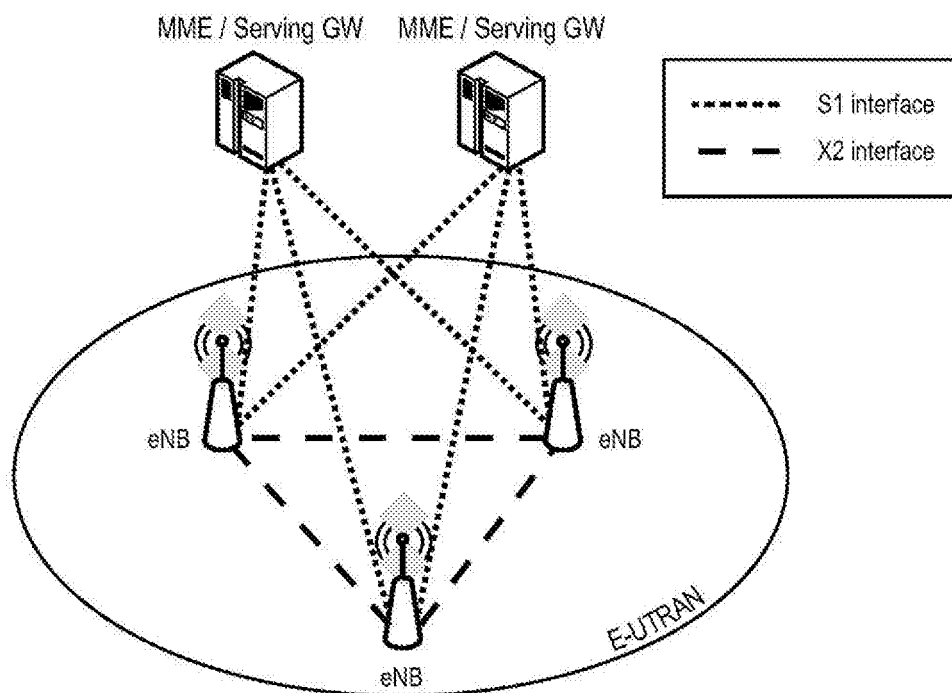


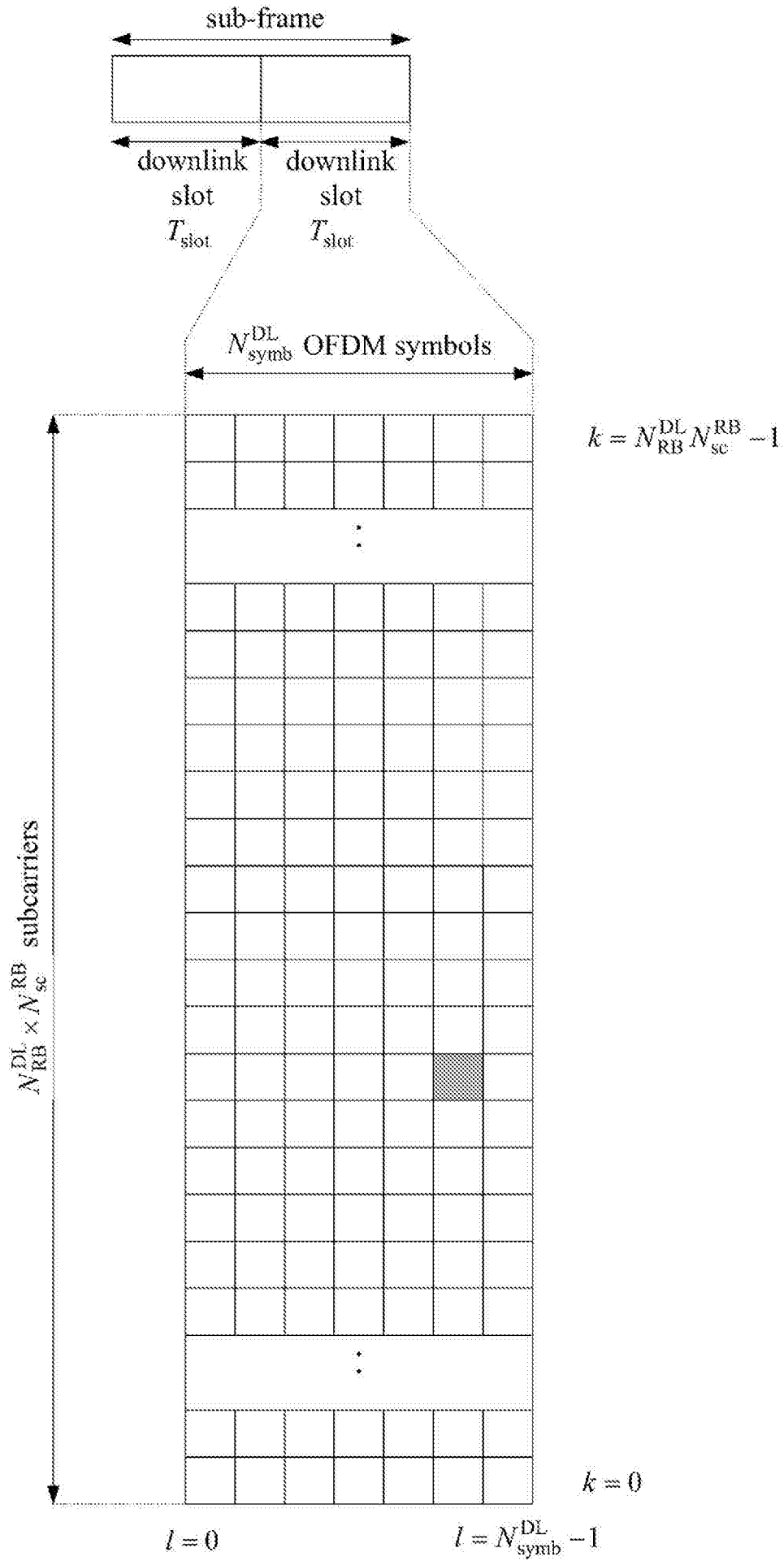
[Fig. 1]



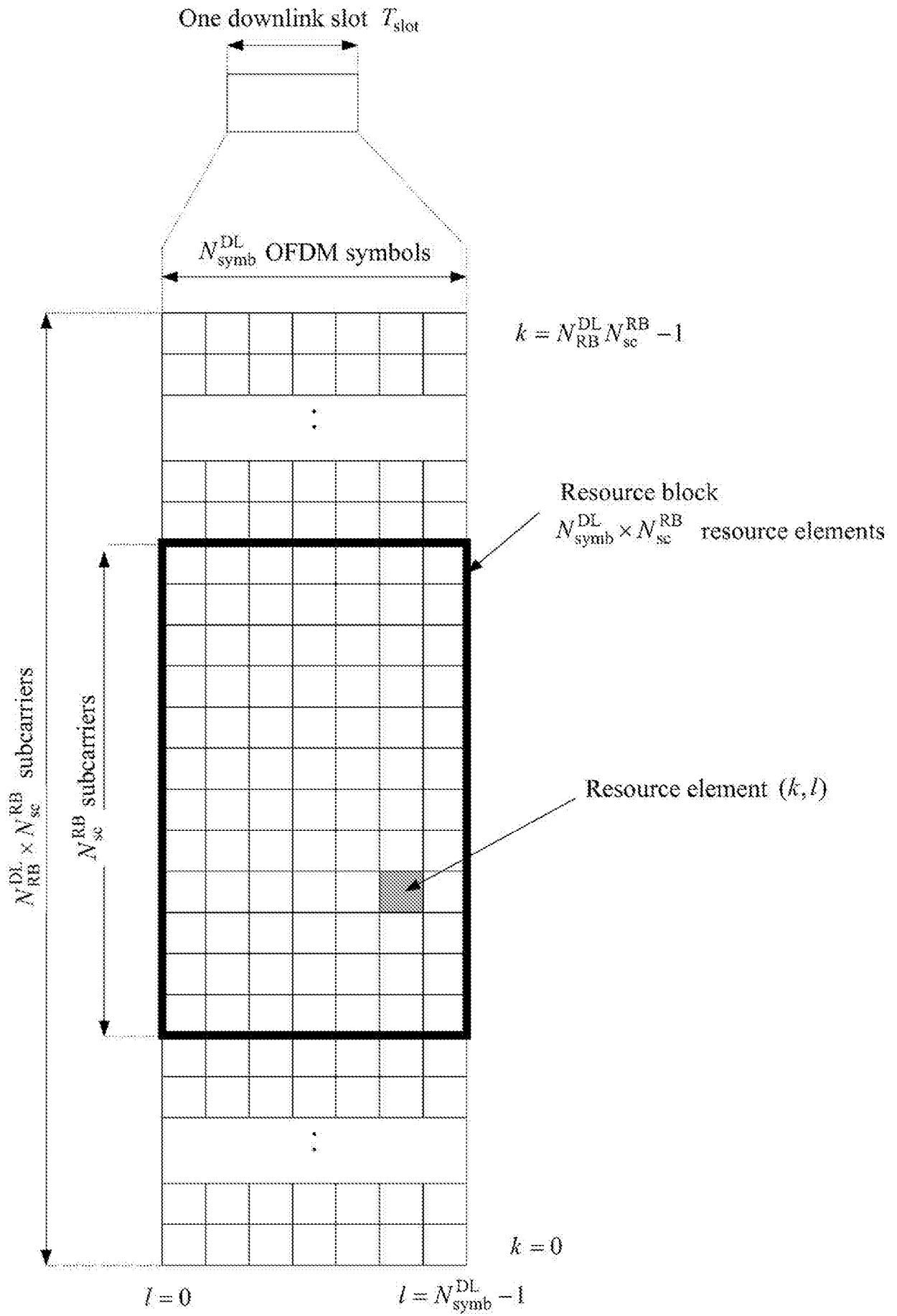
[Fig. 2]



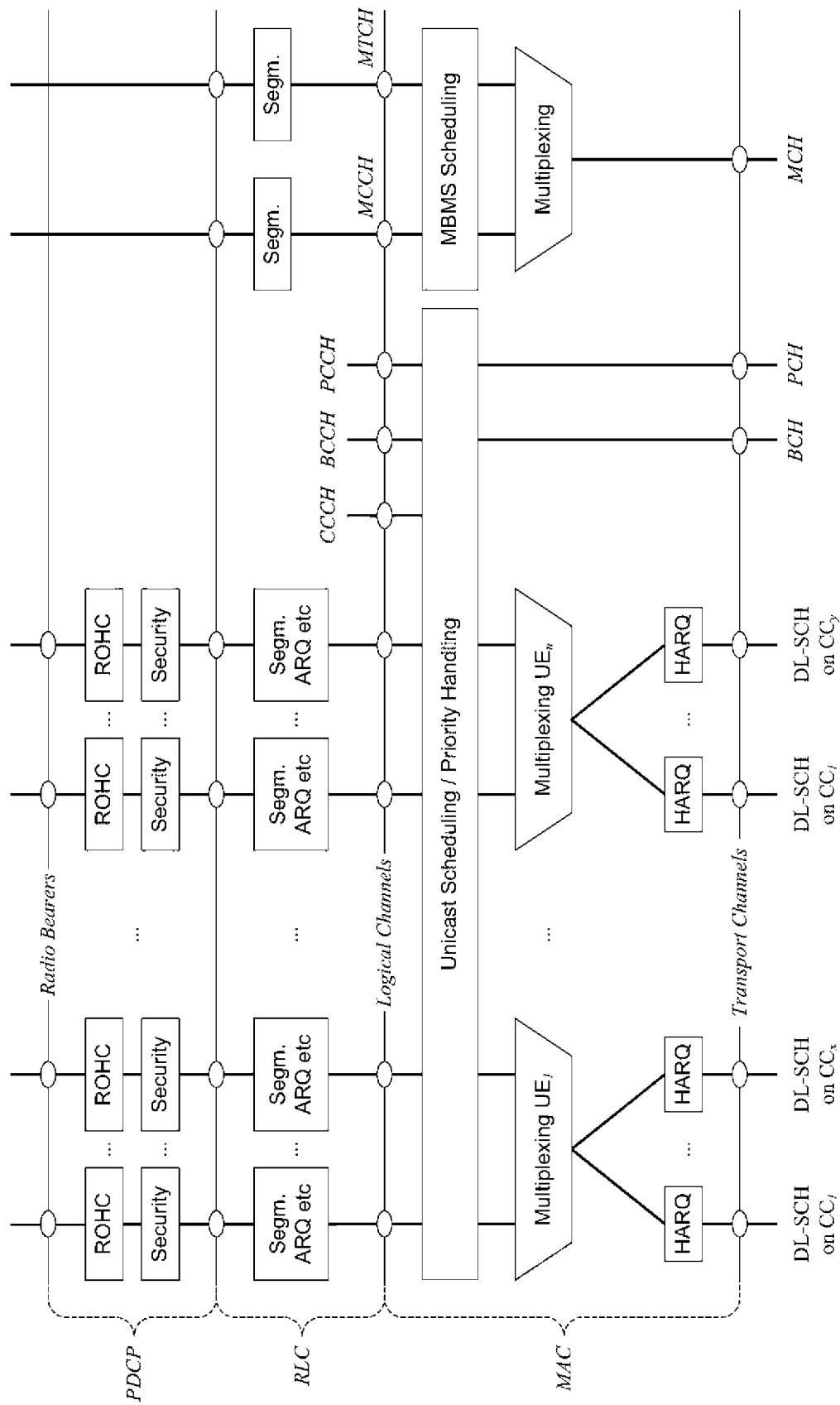
[Fig. 3]



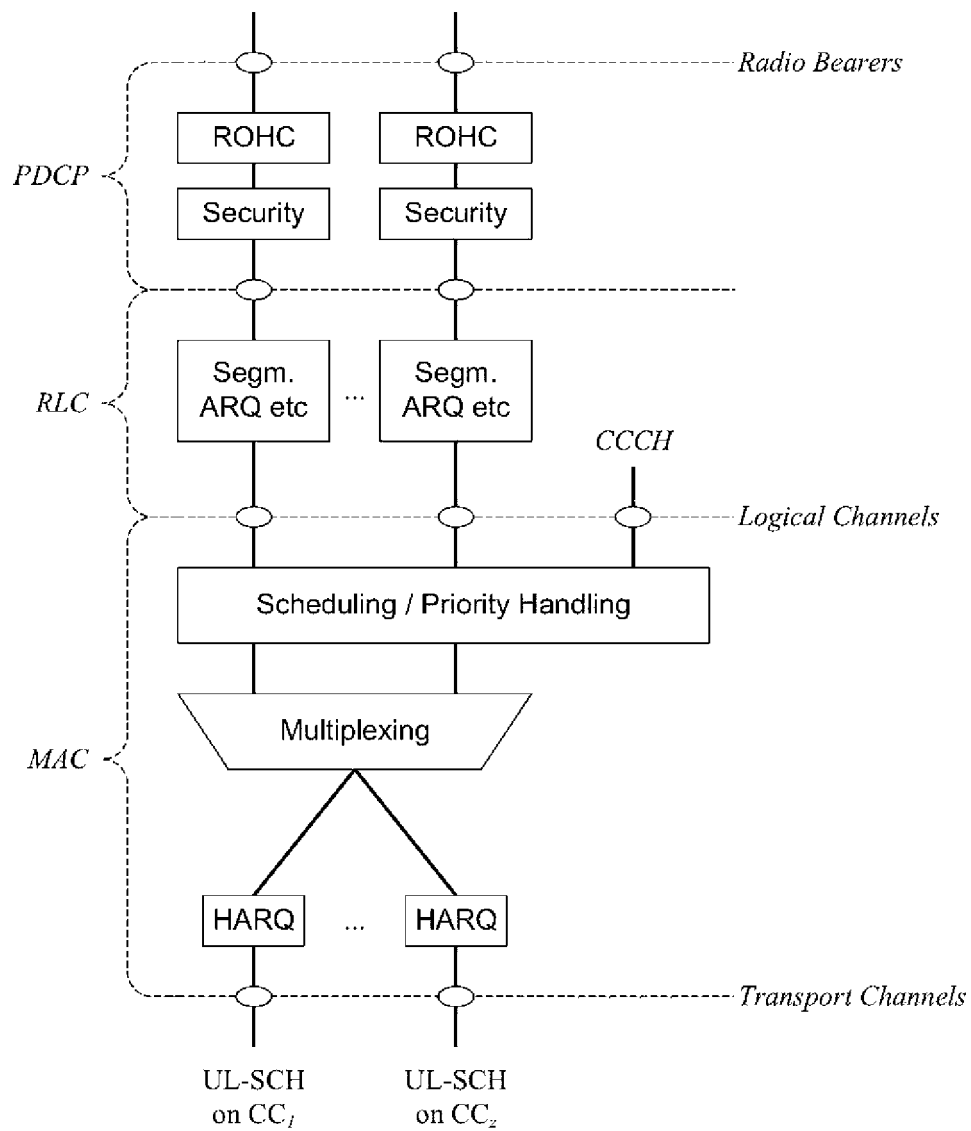
[Fig. 4]



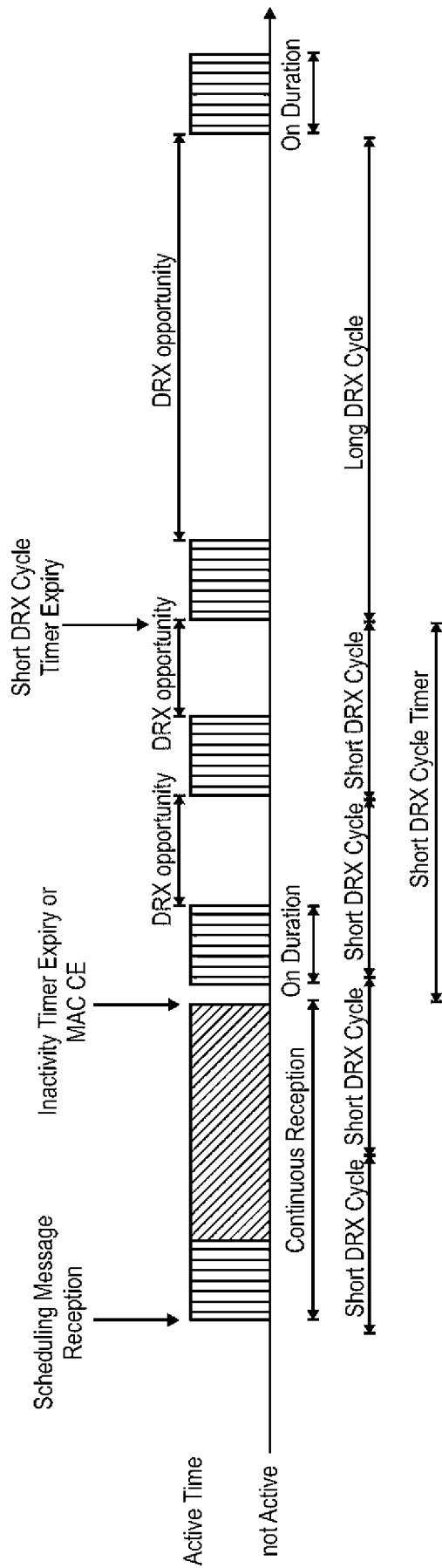
[Fig. 5]



[Fig. 6]



[Fig. 7]



C_7	C_6	C_5	C_4	C_3	C_2	C_1	R
-------	-------	-------	-------	-------	-------	-------	-----

Oct1

C_7	C_6	C_5	C_4	C_3	C_2	C_1	R
R	V	PH (Type 2, PCell)					
R	R	$P_{\text{CMAX,c}} 1$					
R	V	PH (Type 1, PCell)					
R	R	$P_{\text{CMAX,c}} 2$					
R	V	PH (Type 1, Scell 1)					
R	R	$P_{\text{CMAX,c}} 3$					
...							
R	V	PH (Type 1, Scell n)					
R	R	$P_{\text{CMAX,c}} m$					

Macro Cell (Outdoor)

F1

Macro eNodeB

F1

Small Cell

F1

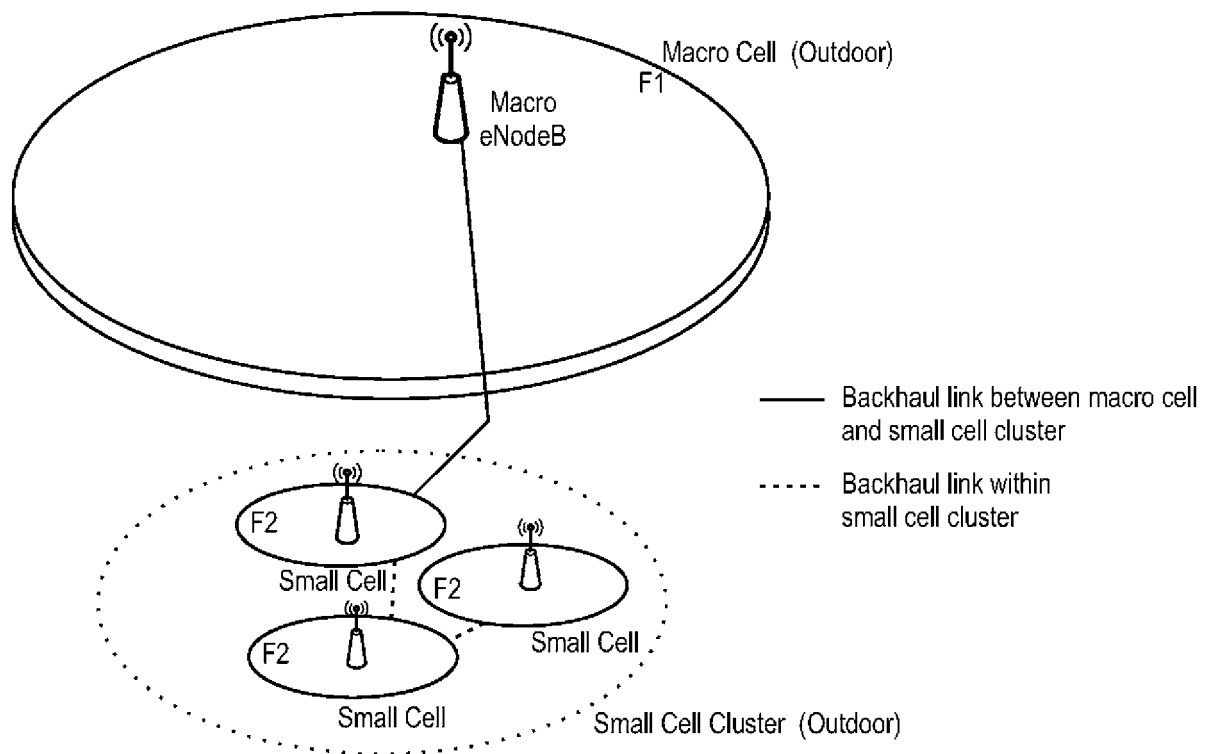
Small Cell

Small Cell

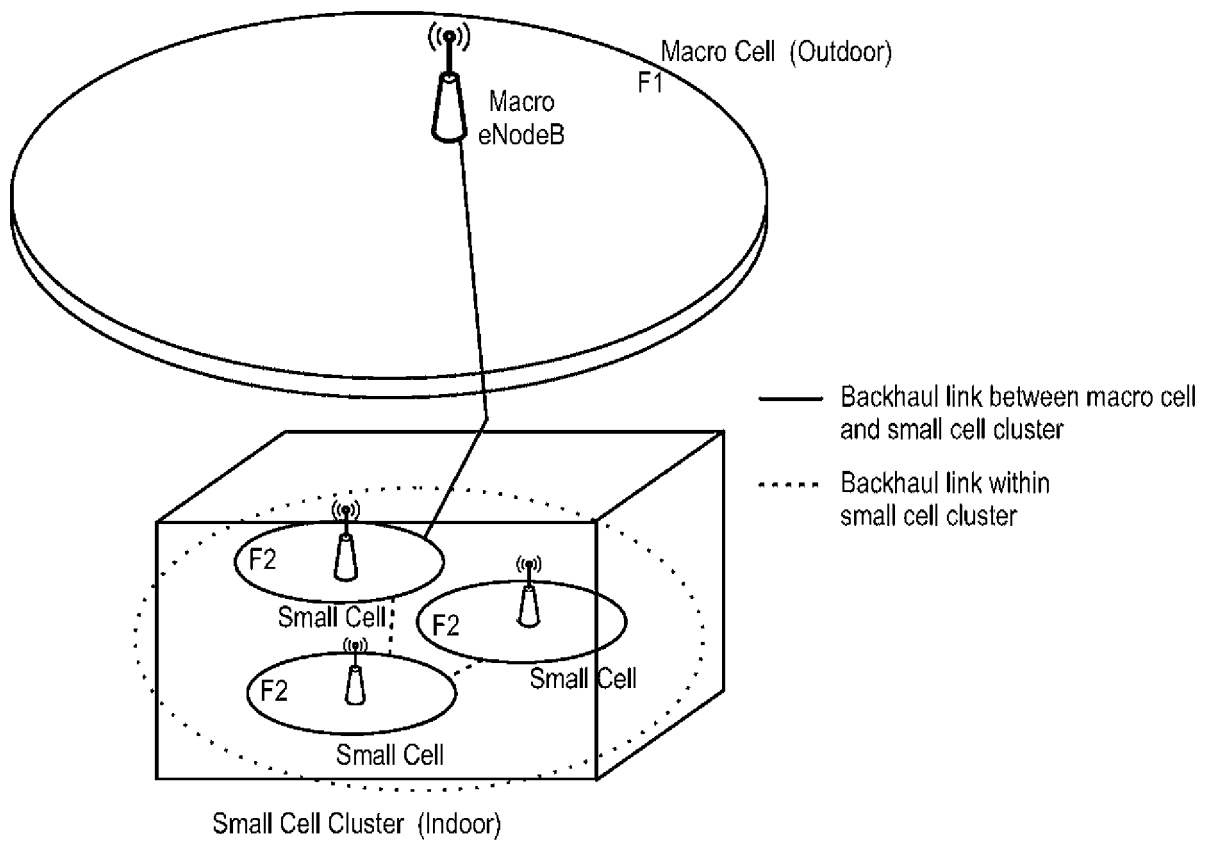
— Backhaul link between macro cell and small cell cluster

---- Backhaul link within small cell cluster

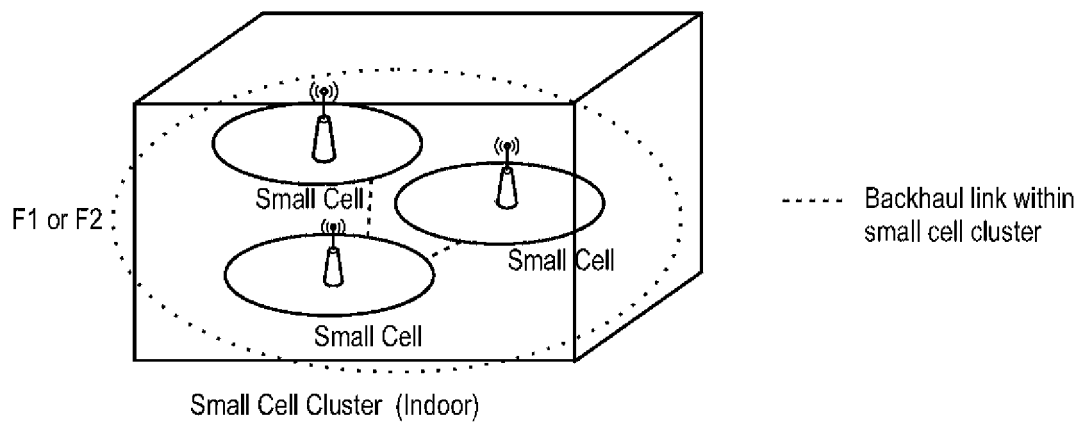
[Fig. 11]



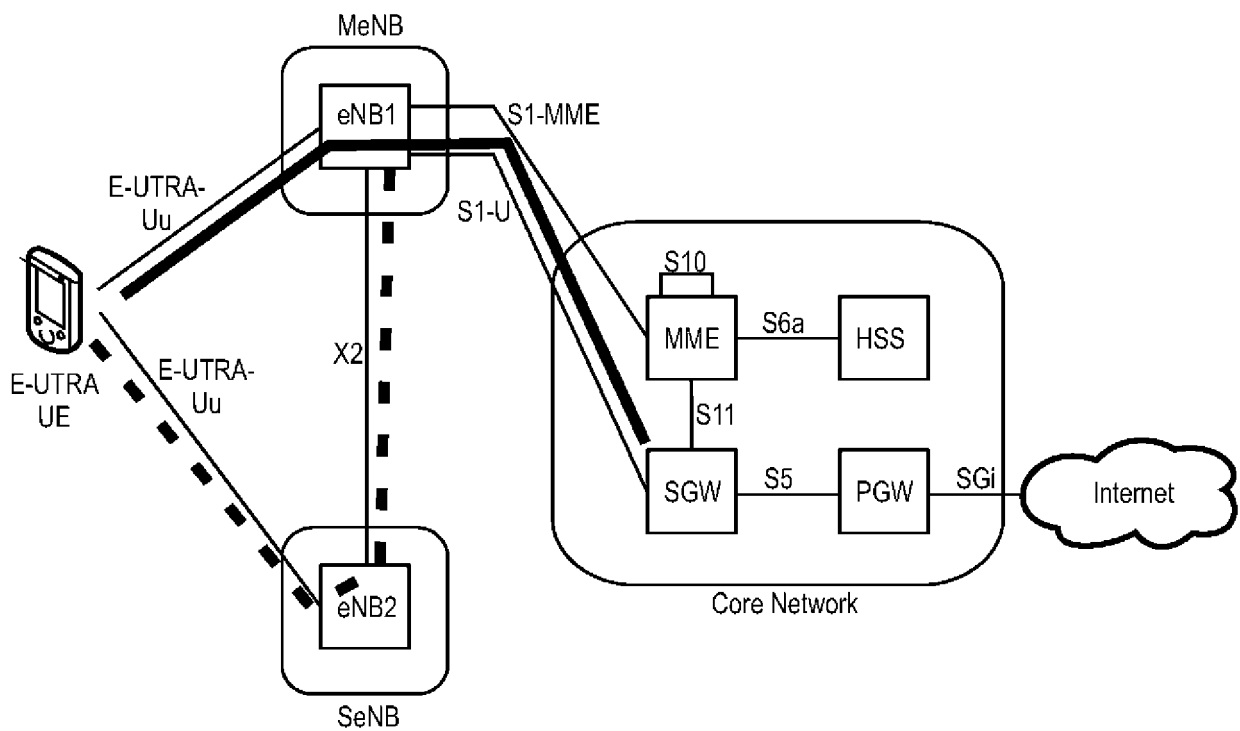
[Fig. 12]



[Fig. 13]



[Fig. 14]



[Fig. 15]

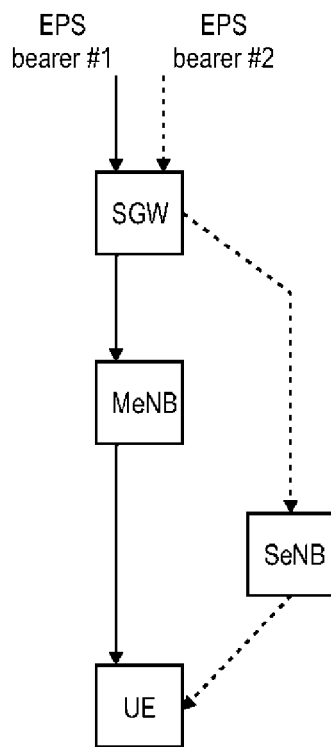


Fig. 15a

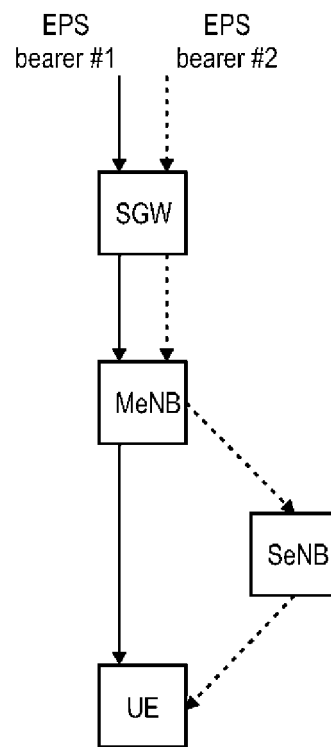


Fig. 15b

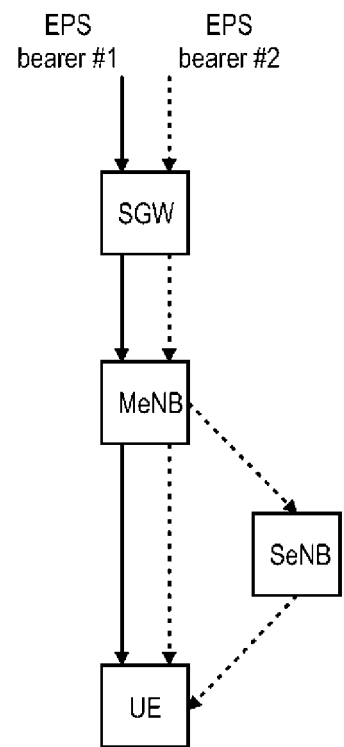
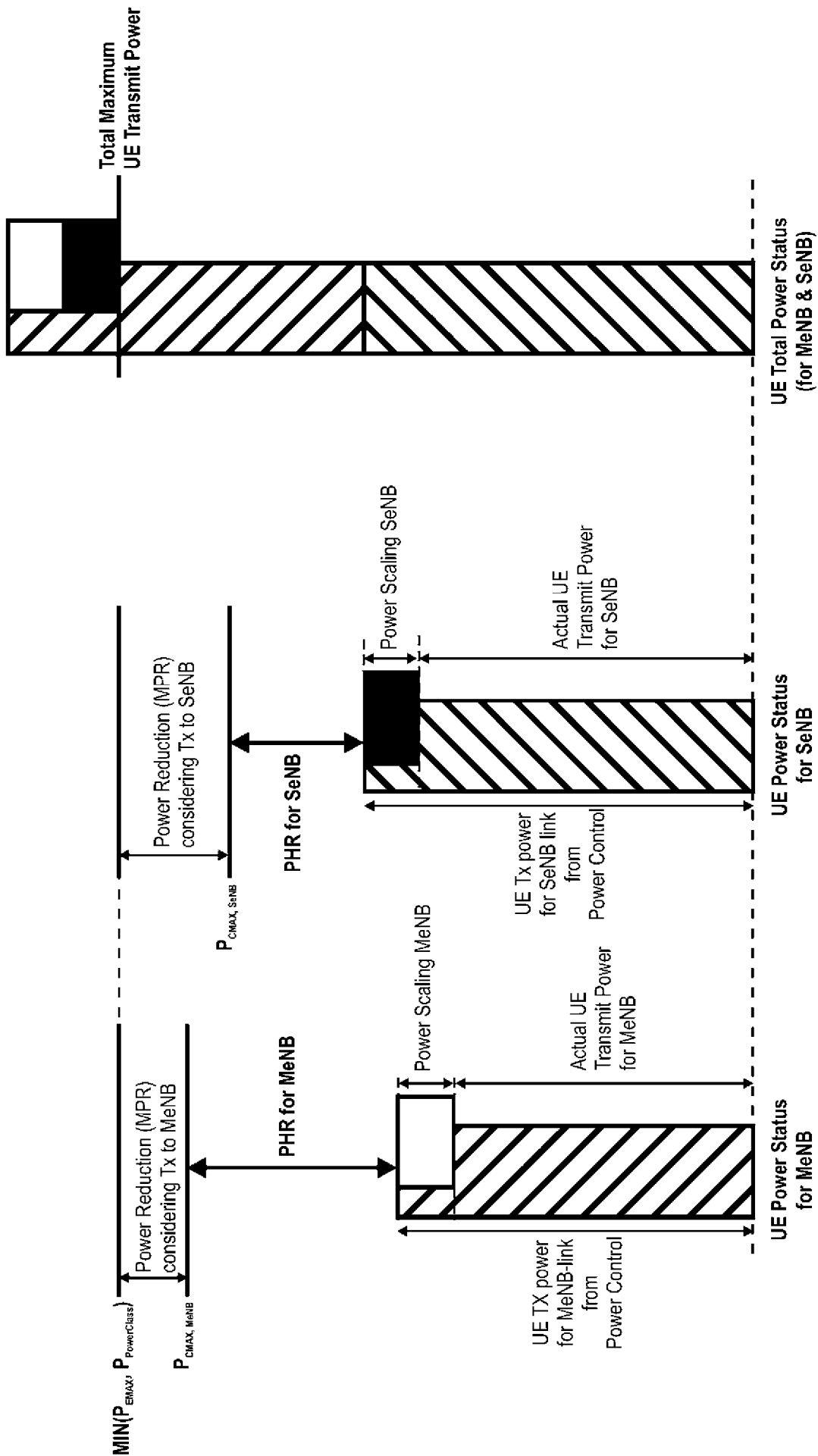
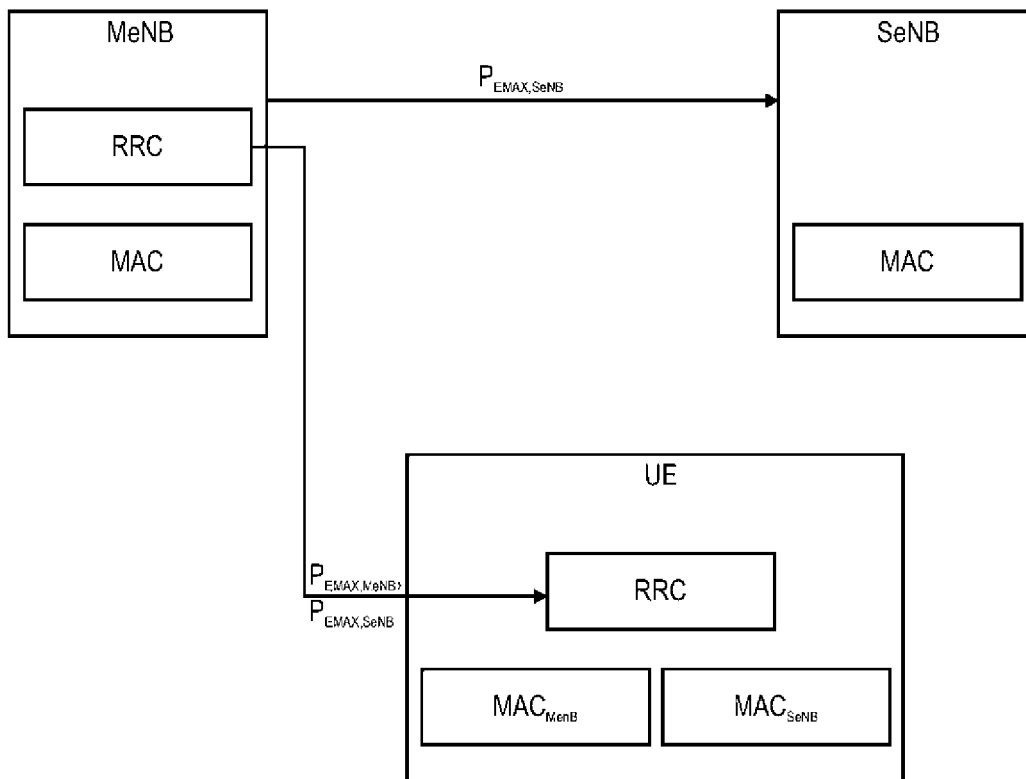


Fig. 15c

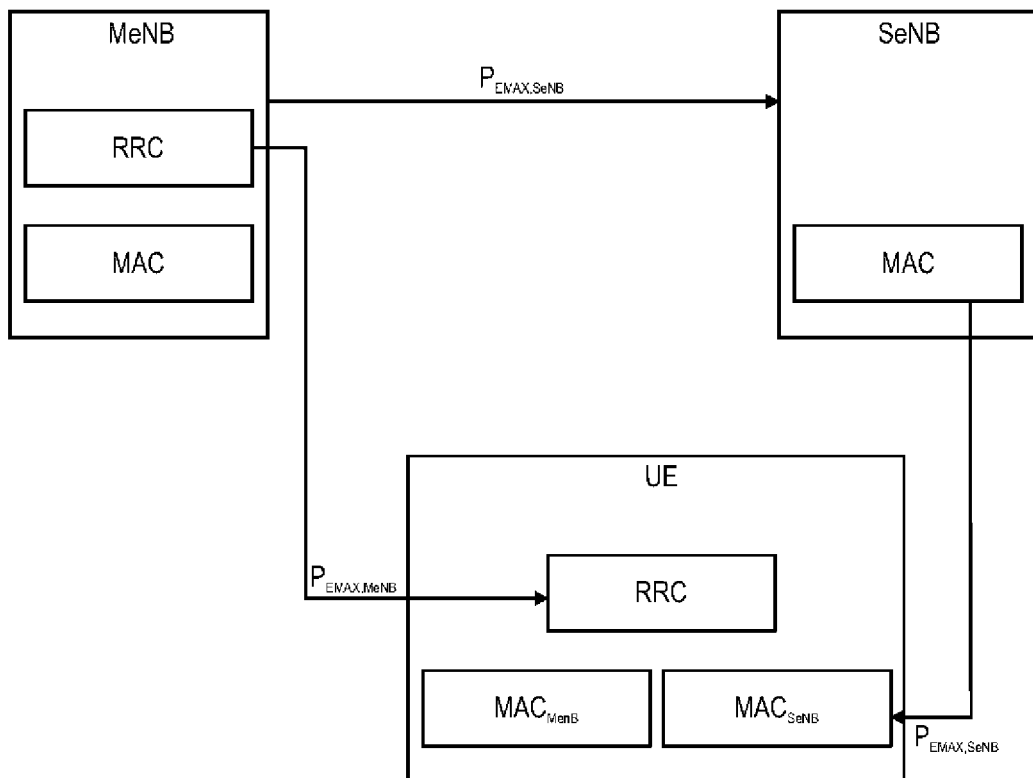
[Fig. 16]



[Fig. 17]



[Fig. 18]



The diagram illustrates the network architecture of the proposed system, showing the interaction between three main entities: MeNB (Master eNodeB), SeNB (Secondary eNodeB), and UE (User Equipment).

- MeNB:** Contains two functional blocks: RRC (Radio Resource Control) and MAC (Media Access Control).
- SeNB:** Contains one functional block: MAC (Media Access Control).
- UE:** Contains three functional blocks: RRC (Radio Resource Control), MAC_{MeNB} (Media Access Control for MeNB), and MAC_{SeNB} (Media Access Control for SeNB).

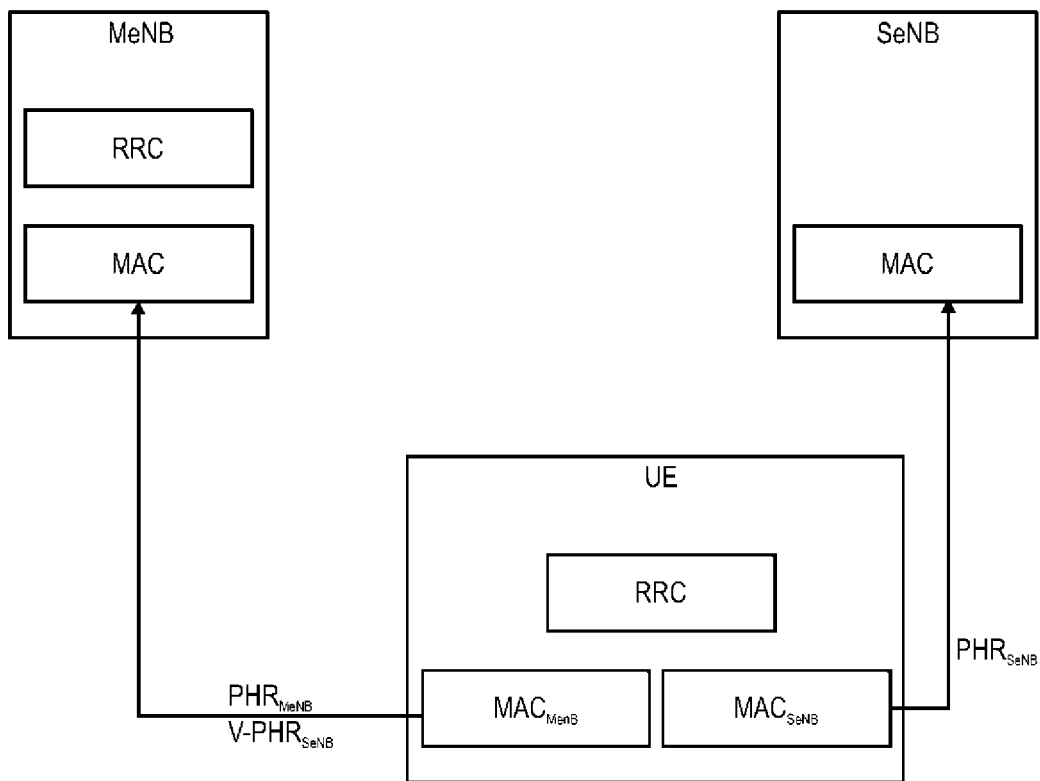
The data flow and signaling are as follows:

- The MeNB MAC block sends data to the UE RRC block, labeled $P_{EVAX,MeNB*}$.
- The UE RRC block sends data to the SeNB MAC block, labeled $P_{EVAX,SeNB}$.
- The UE MAC_{SeNB} block sends data to the SeNB MAC block, labeled *virtual* $P_{CVAX,SeNB}$.

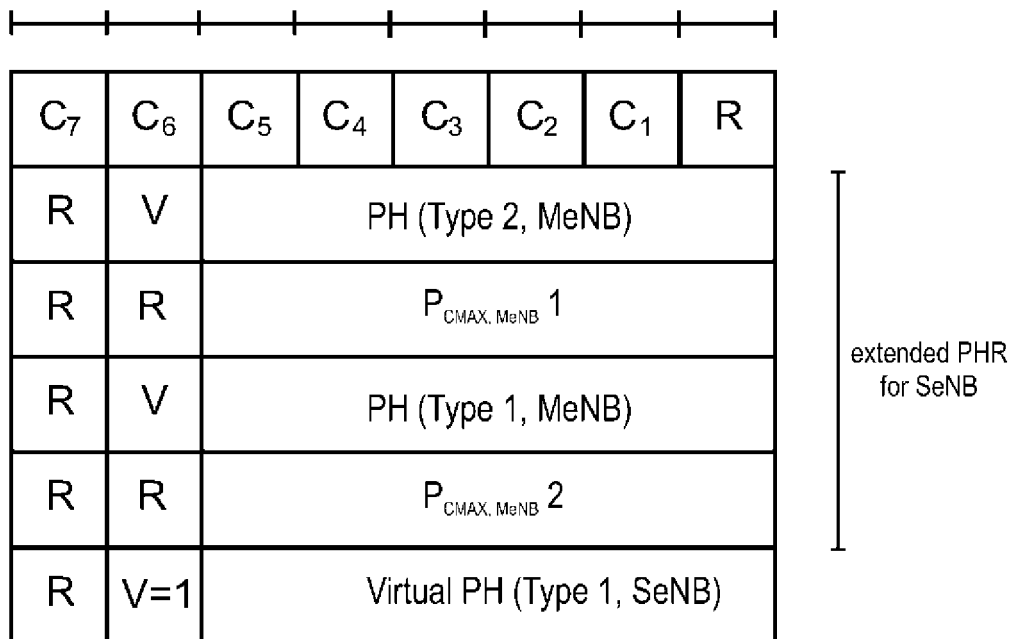
C_7	C_6	C_5	C_4	C_3	C_2	C_1	R
R	V	PH (Type 2, SeNB)					
R	R	$P_{\text{CMAX, SeNB } 1}$					
R	V	PH (Type 1, SeNB)					
R	R	$P_{\text{CMAX, SeNB } 2}$					
R	V=1	Virtual PH (Type 1, SeNB)					
R	R	<i>virtual</i> $P_{\text{CMAX, SeNB } 3}$					

extended PHR for SeNB

[Fig. 21]



[Fig. 22]



[Fig. 23]

C ₇	C ₆	C ₅	C ₄	C ₃	C ₂	C ₁	R
R	V	PH (Type 2, SeNB)					
R	R	P _{C_{MAX}, SeNB} 1					
R	V	PH (Type 1, SeNB)					
R	R	P _{C_{MAX}, SeNB} 2					